

CLAIMS

What is claimed is:

1. A hinge device that rotatably opens and closes a display unit relative to a main body of an electrical or electronic apparatus, the hinge device comprising:

a display coupler having a display bracket coupled to one side of the display unit, and a rotational shaft extending from the display bracket;

a slider rotatably supporting the rotational shaft of the display coupler;

a body coupler having a body bracket coupled to the main body, and a guide rail extending from the body bracket and slidably supporting the slider between a locked position and an unlocked position; and

a rotation controller having a stopper formed on the rotational shaft and a hanging boss formed on one side of the guide rail, the stopper allowing a rotation of the rotational shaft relative to the slider when the slider is in the unlocked position and restraining the rotation of the rotational shaft when the slider is in the locked position .

2. The hinge device according to claim 1, wherein when the slider is in the unlocked position, the stopper allows rotation of the rotational shaft to open or close the display unit, and when the slider is in the locked position, the stopper engages the hanging boss to maintain the display unit at a desired angle relative to the main body.

3. The hinge device according to claim 1, wherein the body bracket comprises an engaging projection to couple the hinge device to the main body of the electrical or electronic apparatus.

4. The hinge device according to claim 1, wherein the slider comprises:

a slider body;

an inserting hole formed on the slider body, through which the rotational shaft of the display coupler is inserted and rotated; and

an engaging part formed on the bottom of the slider body, the guide rail slidably supporting the engaging part.

5. The hinge device according to claim 1, further comprising an elastic unit inserted into the body coupler, elastically supporting the slider.

6. The hinge device according to claim 5, wherein the elastic unit is inserted into a bottom face of the body coupler.

7. The hinge device according to claim 5, wherein the elastic unit comprises:
a body part inserted into the body coupler;
an engaging hole formed on the body part to couple the elastic unit to the slider; and
an elastic part extending from a side of the body part to elastically support the slider.

8. The hinge device according to claim 7, wherein a shape of the elastic part extending from the body part is a continuous wave shape.

9. The hinge device according to claim 7, wherein the slider has an engaging hole formed on a bottom face of the slider body, through which the elastic unit is coupled to the slider body of the slider, and

the guide rail of the body coupler has a guide hole formed on a bottom face thereof, through which the slider and the elastic unit are coupled to each other and slid together, and an inserting part through which the elastic unit is seated.

10. An electrical or electronic apparatus, comprising:

a main body;

a display unit;

a hinge device to rotatably connect the display unit to the main body and open and close the display unit, the hinge device comprising

a display coupler having a display bracket coupled to one side of the display unit, and a rotational shaft extending from the display bracket,

a slider rotatably supporting the rotational shaft of the display coupler,

a body coupler having a body bracket coupled to the main body, and a guide rail extending from the body bracket and slidably supporting the slider between a locked position and an unlocked position, and

a rotation controller having a stopper formed on the rotational shaft and a hanging boss formed on one side of the guide rail, the stopper allowing a rotation of the rotational shaft relative to the slider when the slider is in the unlocked position to open or close the display unit, and the stopper engaging the hanging boss and restraining the rotation of the rotational shaft when the slider is in the locked position to maintain the display unit at a desired angle relative to the main body.

11. The electrical or electronic apparatus according to claim 10, wherein the slider comprises:

- a slider body;
- an inserting hole formed on the slider body, through which the rotational shaft of the display coupler is inserted and rotated; and
- an engaging part formed on the bottom of the slider body, the guide rail slidably supporting the engaging part.

12. The electrical or electronic apparatus according to claim 10, further comprising an elastic unit inserted into the body coupler, elastically supporting the slider.

13. The electrical or electronic apparatus according to claim 12, wherein the elastic unit comprises:

- a body part inserted into the body coupler;
- an engaging hole formed on the body part to couple the elastic unit to the slider, and
- an elastic part extending from a side of the body part to elastically support the slider.

14. The electrical or electronic apparatus according to claim 13, wherein the slider has an engaging hole formed on a bottom face of the slider body, through which the elastic unit is coupled to the slider body of the slider, and

the guide rail of the body coupler has a guide hole formed on a bottom face thereof, through which the slider and the elastic unit are coupled to each other and slid together, and an inserting part through which the elastic unit is seated.

15. A method of opening a display unit that is closed relative to a main body of an electrical or electronic apparatus having a hinge device that rotatably joins the display unit to the main body, the method comprising:

sliding the display unit horizontally relative to the main body to offset a back edge of the display unit from the main body, which places the hinge device in an unlocked position;

opening the display unit by rotating the display unit away from the main body to a desired angle relative to the main body; and

sliding the display unit horizontally relative to the main body to realign the back edge of the display unit with the main body, which places the hinge device in a locked position and maintains the display unit at the desired angle.

16. The method according to claim 15, wherein the opened display unit is closed by: sliding the display unit horizontally relative to the main body to offset the back edge of the display unit from the main body, which places the hinge device in the unlocked position;

rotating the display unit toward the main body; and

closing the display unit by sliding the display unit horizontally relative to the main body to realign the back edge of the display unit with the main body, which places the hinge device in the locked position.

17. The method according to claim 15, wherein the angle is changed by:

sliding the display unit horizontally relative to the main body to offset the back edge of the display unit from the main body, which places the hinge device in the unlocked position;

rotating the display unit to a new desired angle relative to the main body; and

sliding the display unit horizontally relative to the main body to realign the back edge of the display unit with the main body, which places the hinge device in the locked position to maintain the display at the new angle.

18. An electrical or electronic apparatus, comprising:

a main body;

a display unit that is closed relative to the main body; and

a hinge device that rotatably joins the display unit to the main body,

wherein the display unit is opened by sliding the display unit horizontally relative to the main body to offset a back edge of the display unit from the main body, which places the hinge device in an unlocked position, opening the display unit by rotating the display unit away from the main body to a desired angle relative to the main body, and sliding the display unit horizontally relative to the main body to realign the back edge of the display unit with the main body, which places the hinge device in a locked position to maintain the display unit at the desired angle.

19. An electrical or electronic apparatus, comprising:

a main body;

a display unit that is closed relative to the main body; and

a hinge device that rotatably joins the display unit to the main body, the hinge device comprising a locking mechanism integrally formed with the hinge device to lock the display unit to the main body without using a latch on the display unit,

wherein the display unit is opened by sliding the display unit horizontally relative to the main body to offset a back edge of the display unit from the main body, which places the hinge device in an unlocked position, opening the display unit by rotating the display unit away from the main body to a desired angle relative to the main body, and sliding the display unit horizontally relative to the main body to realign the back edge of the display unit with the main body, which places the hinge device in a locked position to maintain the display unit at the desired angle.